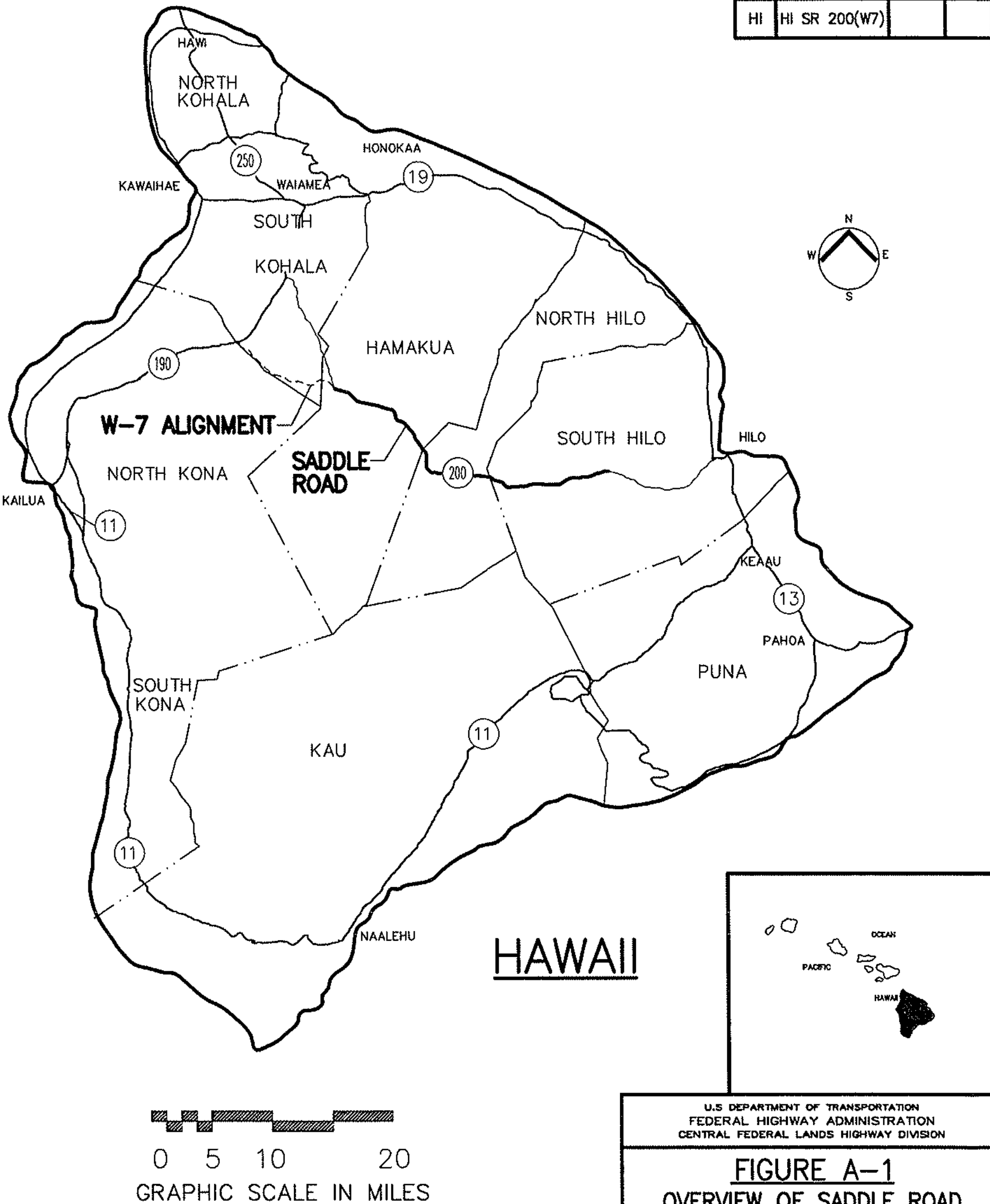
U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

RECORD OF DECISION
Saddle Road (State Route 200)
Mamalahoa Highway (State Route 190) to Milepost 41
County of Hawai‘i, State of Hawai‘i

STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI SR 200(W7)		



HAWAII

U.S DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

FIGURE A-1
OVERVIEW OF SADDLE ROAD

Scale: As Noted   Date: Oct. 2009

SHEET No. 1 OF 1

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Introduction

This Record of Decision (ROD) concerns the proposal to improve 10.3 miles of Saddle Road (State Route [SR] 200). The proposed portion of the route covered by this Record of Decision begins at the junction with the Mamalahoa Highway (SR 190) and extends to approximately Milepost 41 on Saddle Road near Pohakuloa Training Area. This ROD is based on a Final Supplemental Environmental Impact Statement (SEIS) that described and evaluated the impacts associated with a new alternative alignment for the proposed improvement of Section I of Saddle Road, which extends from Mamalahoa Highway near Milepost 53 to Milepost 41, making up the western end of Saddle Road. The entire existing Saddle Road extends between Mileposts 6 and 53. Sections II and III of Saddle Road, between Mileposts 6 and 41, have already been completed or are advancing towards completion along the alignments identified in the 1999 Final EIS for the entire project. Section IV is currently in final design, leaving Section I as the last piece planned for construction. The proposal lies within Hawai‘i County, Hawai‘i.

Purpose and Need

The purpose of this project is to provide a safe and efficient route for access along Saddle Road and for cross-island traffic between East and West Hawai‘i. The proposed improvements to Saddle Road would address five general types of needs: roadway deficiencies, conflicts with and hazards of military operations, capacity, safety, and social demand and economic development. In 2006, the Department of the Army (the Army) purchased for military training a property known as the Ke‘āmuku parcel. The alignment selected for Section I of the improved Saddle Road in the 1999 Record of Decision (ROD), termed W-3, essentially divides the Ke‘āmuku parcel in half. In order to provide a safe separation of civilian transportation and military training, the Army requested that the Federal Highway Administration (FHWA) and the Hawai‘i Department of Transportation (HDOT) find another alternative alignment near the southern boundary of Ke‘āmuku for the realignment of this section of Saddle Road. Because reducing conflicts with and hazards related to military operations is an element of the purpose and need of the project, FHWA and HDOT studied a new proposed alignment of Saddle Road, which was termed W-7.

Decision and Rationale

The alternative alignment selected for improving Section I of Saddle Road is Alignment W-7, because this alternative best meets the purpose and need and has similar or less impacts than the other alternatives studied. Per the analysis in the SIES and the 1997 EIS, it is the environmentally preferred alternative.
Saddle Road is being developed to HDOT and American Association of State Highway and Transportation Officials (AASHTO) rural arterial design standards, with a design speed of 60 miles per hour. Uphill passing lanes, truck escape ramps, scenic pullouts, and military vehicle crossings

will be incorporated into project design as needed to enhance safety and improve the projected level of service.

The proposed improvements would incorporate two 12-foot travel lanes and two 8-foot paved shoulders. Because of the grades, a passing lane will be present for most of W-7's length, allowing eastbound military convoys and truck traffic to utilize Saddle Road without congesting other traffic (creating a total of three 12-foot lanes) Between the eastern boundary of the Keʻāmuku parcel and approximately MP 41, or from stations 466+00 to 544+37, there would be an additional 8-foot strip of pavement on the north side only of the highway, which would serve as an additional firebreak, with a four-inch high curb on the outside. On the outside edge of the firebreak, there would be a four-foot high metal wire fence with metal posts to discourage motor vehicles from straying off the paved surface. This matches the work that has already been done on the stretch of highway just to the east of this section. At the westernmost portion of this segment, at station 466+00, the additional paved strip ends. From stations 340+00 to 466+00, a four-inch high extruded asphalt curb is added to the outside of the shoulder on the south side only of the road as a fire prevention tool. Mitigation commitments contained in the Final SEIS and summarized in this Record of Decision are to be incorporated into the project during design or as construction contract specifications.

Alternatives Considered

Various alternatives for Section I that were conceptualized as part of the 1999 FEIS or later were initially considered in the SEIS process for their potential to satisfy the purpose and need. In the end, only one alternative, W-7, was advanced for consideration in the SEIS.

Alternatives Considered but Eliminated Without Detailed Study

The No Action Alternative would maintain Saddle Road as it is today. It would include existing maintenance efforts with some possible surface rehabilitation activities. It would not enhance safety, eliminate roadway deficiencies, improve level of service, improve operational function, accommodate future traffic levels, or reduce or eliminate conflicts between motorists and Pohakuloa Training Area military operations. The No Action Alternative, which was not selected in the 1999 ROD for reasons of safety, circulation, and land use impacts, would continue use of the existing alignment, and traffic on the substandard road through Waikiʻi would continue to increase. Since construction is almost complete in Sections II and III, an overall No Action Alternative is impossible. The reasons for rejection of the No Action Alternative remain valid for Section I, which is why it was not evaluated for selection in the SEIS.

Variations on the W-7 alignment were preliminarily examined for engineering characteristics, fire potential, and historic and biological impacts. After this preliminary examination, W-7 was determined to be the best alignment among the variations. The other alignment considered and selected in the 1999 ROD was the W-3 alignment. However, the current analysis determined that although W-3 did still meet the project purpose and need, it did not meet it as well as W-7 under the changed land ownership and land use circumstances. Although W-3 could be built if it was determined that W-7 was not feasible to build, W-3 was not advanced for further analysis and consideration in the SEIS.

Transportation System Management and mass transit alternatives were not considered reasonable or feasible to satisfy the purpose and need for the proposed action. Saddle Road is a rural highway. Current and projected traffic levels for this roadway do not justify the development of Transportation System Management alternatives, such as high-occupancy vehicle lanes, or the construction of mass transit facilities. Without improvements to the roadway structure and geometrics, high occupancy vehicle lanes or mass transit facilities could not be developed along Saddle Road. Regardless of improvements to Saddle Road, the buses would continue using the Hamakua coast route, as this is where a large portion of the major users reside, and Hawaiʻi Mass Transit Agency report that there are no current plans to establish bus service on Saddle Road after improvements are completed. As such, Transportation System Management and mass transit alternatives were eliminated from further consideration.

Measures to Minimize Harm

Measures contained in FHWA's Standard Specifications are formulated to minimize environmental harm and will be incorporated into the construction contract documents as requirements of the contractor and subcontractors and are enforced by the Project Engineer. These Standard Specifications are presented in detail in the Final SEIS and include measures such as: erosion control and sedimentation prevention; compliance with local and state regulations and permitting requirements; prevention of material and fuel spills; prevention of fires; recycling of materials; and control of dust and noise.

The mitigation commitments enumerated in this Record of Decision were developed specifically for the Saddle Road project in consultation with local, state, and federal agencies as well as HDOT and will be included in construction contract documents written in standard specification format while others will be incorporated into the project during design.

The following mitigation commitments apply to all project segments, unless otherwise noted.

LAND USE AND RELATED GOVERNMENTAL PLANS AND POLICIES

1. Construction contract conditions will require access to public use and recreation areas, ranching operations, residences, and the PTA to be maintained at all times during construction.

SOCIOECONOMIC

2. The FHWA will install signage to remind visitors that there are no services on Saddle Road.

COMMUNITY IDENTITY AND COHESION

3. A traffic control plan will be developed to outline the steps needed to minimize congestion and maintain access to adjacent properties at all times during construction.

4. As feasible, construction-related delays will be minimized during normal rush hours for commuters.

5. Since construction work on W-7 would avoid the existing Saddle Road alignment, construction impacts are expected to be minimal on cross-island traffic. However, if significant delays or closures are anticipated at the project corridor's intersections with Mamalahoa Highway or Saddle Road, information will be publicized on a regular, on-going basis through posted advertisements, radio and newspaper bulletins, and road signs at each end of Saddle Road and along Mamalahoa Highway (SR 190) and Kaumana Drive in Hilo.

OUTDOOR RECREATION RESOURCES AND HUNTING

6. The traffic control plan will specify that during construction, access will be maintained at all times to areas of Saddle Road that serve recreational areas, including hunting units.

PUBLIC SERVICES, COMMUNITY CENTERS AND LOCAL BUSINESSES

7. Emergency service providers, including the Hawaiʻi County Fire Department, the Hawaiʻi Police Department, and the PTA, will be kept informed on the location and schedule of construction along the length of the project.

8. Traffic control plans prepared for construction of Saddle Road will include provisions for allowing emergency vehicles to pass through construction zones without delays and to have unimpeded access to roadside facilities at all times.

NATIVE HAWAIIAN CULTURES AND VALUES

9. As has occurred previously when newly-constructed segments of Saddle Road were opened for public use, proper cultural protocol will be completed by a native Hawaiian who follows the ways of the old culture to release and sanctify or bless the construction project.

RIGHT-OF-WAY AND RELOCATION

10. The acquisition of property necessitated by the project would be completed in accordance with Federal Uniform Relocation and Real Property Acquisition Policies Act of 1970 (P.L. 91-646), as amended, and applicable State regulations.

PEDESTRIAN AND BICYCLE FACILITIES AND USE

11. The project will accommodate bicycles and pedestrians through a signed, shared route on the shoulder.

12. Project construction will include provisions for pedestrian and bicycle crossings of Saddle Road during construction periods.

AIR QUALITY

13. Standard dust control and construction equipment emission control measures will be implemented as necessary to reduce temporary impacts to air quality during construction activities. Water or a dust palliative will be applied as necessary to minimize particulate

pollution. Areas to receive such treatment will include unpaved access roads, staging sites, and construction areas where the movement and operation of construction equipment produces airborne dust.

14. Construction equipment will be required to meet all applicable emission standards.

15. FHWA and HDOT will keep apprised of the results of monitoring for depleted uranium at areas of concern within PTA by the Hawai‘i State DOH and the Army and take any necessary precautionary measures. No ongoing monitoring for depleted uranium is planned for the W-7 alignment.

FIRE HAZARD

16. The Typical Sections for the project are discussed and depicted in Section 2.2.1 of the Final Supplemental EIS. The expanded and modified Typical Sections for the roadway would both reduce the likelihood of accidental ignition from unintentional road sources (car fires, catalytic converters, cigarettes, etc.) and assist in creating a firebreak and fuelbreak. The Typical Sections have been specially designed to reduce wildfire impacts, in ways specific to the segments of Section I through which they pass. All share the base characteristics of Typical Section A (reference: Final EIS: Figure 2.2.1.a), which extends east from Mamalahoa Highway. It incorporates two 12-foot travel lanes, two 8-foot paved shoulders, and a passing lane for most of the length.

17. To reduce the threat of wildfires between the eastern boundary of the Ke‘āmuku parcel and approximately MP 41, which passes near Palila critical habitat, typical section B has features in addition to those listed above (reference: Final EIS: Figure 2.2.1.b, Section B):

   - Two 12-foot travel lanes with 8-foot paved shoulders;.
   - An 8-foot strip of pavement on the north side of the highway, which would serve as a firebreak, with a four-inch high curb on the outside; and.
   - At the outside edge of the firebreak on the north side of the highway, a wire fence with metal posts would be constructed to a height of four feet on the edge of the pavement.

18. Further west, as W-7 crosses Ke‘āmuku and descends into lower elevations, the primary concern is to prevent fires from Saddle Road spreading southwards, towards the western boundary of the Ke‘āmuku Endangered Species Management Unit containing *Haplostachys haplostachya*. Typical Section C is illustrated in Figure 2.2.1.b, Section C, of the Final EIS and is modified from Typical Section A as follows:

   - Three 12-foot travel lanes with 8-foot paved shoulders, with a four-inch high extruded asphalt curb at the outside of the shoulder on the south side of the highway.

In addition, the following mitigation measure is planned:

19. To minimize the risk of wildfire during construction, the Special Contract Requirements will mandate that all construction activity shall be restricted to within the clearly delineated ROW and that entry and exit into the ROW by all construction personnel and equipment

shall be at previously identified and marked non-sensitive areas. No smoking will be allowed in the project area.

WATER RESOURCES

The Stormwater Pollution Prevention Plan (SWPPP) will include the following BMPs:

20. Practices that prevent erosion, including the stabilization of cut and fill slopes by vegetative as well as non-vegetative means.

21. Practices that trap pollutants before they can be discharged, such as silt fences and sedimentation basins.

22. Practices that prevent the mixing of pollutants from construction materials and stormwater, such as providing protected storage for chemicals, paints solvents, and other toxic materials.

23. During construction, erosion will be minimized by applying temporary measures that will reduce the velocity of the runoff and retain sediment on-site. Examples of these measures may include but are not limited to: silt fences, check dams, mulching, culvert outlet protection, and sedimentation basins. Construction materials will be stored in a protected area with measures in place to contain and clean-up spills.

24. Permanent pollution control measures will be applied to minimize degradation of stormwater quality after construction of the road has been completed. These measures include but are not limited to, the following examples: providing velocity reducers and/or settlement basins at culvert outlets, vegetating slopes, minimizing the steepness of slopes where possible, providing stream bank stabilization where required, and managing the use of chemicals for roadway maintenance.

25. Cut slopes will be revegetated to reduce highway runoff pollution, where appropriate.

26. If a major hazardous spill occurs, cleanup efforts will be coordinated through both the County of Hawaiʻi Civil Defense Agency and the State of Hawaiʻi Department of Health.

CLIMATE, GEOLOGY, AND SOILS

27. Prior to construction, a final review will be conducted to determine the probability of caves or lava tubes in the construction corridor. Should significant caves be present, final design and/or construction techniques will be developed to avoid or minimize impacts.

28. If a significant cave or lava tube is inadvertently encountered during construction, all construction activity will cease immediately at the location in question and the Project Engineer will be notified. Consultation will be conducted with appropriate resource or regulatory personnel to ensure that unique biological, cultural, or geological resources associated with these features are adequately protected, or investigated and documented.

29. Construction specifications will be incorporated to minimize potential hazards of caves to construction workers.

30. Following completion of construction, slopes and denuded areas will be allowed to revegetate with stabilizing grasses, such as kikuyu and ‘a‘ali‘i, to minimize soil erosion.

BOTANICAL RESOURCES

31. All equipment, material, and support structures will be stored and maintained within the ROW or in designated staging areas that have been approved as being areas where the storing, servicing, and staging of equipment and material will not adversely impact native species. These areas will be clearly demarcated and fenced prior to construction.

32. All construction activity will be restricted to the clearly delineated ROW.

33. A Project Engineer or representative will be on site at all times during construction to ensure implementation and compliance with environmental mitigation requirements as stated in the contract documents.

34. Contractors will be required to participate in an environmental quality control program similar to required safety programs contained in Contract Specifications.

35. After construction, HDOT will maintain the area to keep the unpaved road verges vegetation-free or closely mowed, which will also aid in reducing the spread of alien weeds.

36. The following standard management requirements will be implemented to prevent introduction of noxious weeds:
    - All heavy equipment will be cleaned prior to entering the project area; and
    - All plant material used for erosion control and road maintenance will be certified weed free.

WILDLIFE AND OTHER FAUNAL RESOURCES

37. All mitigation committed to in the original ROD is still applicable to the project. Additional measures are provided under the Threatened and Endangered Species section.

FLOODPLAINS AND DRAINAGE

38. Saddle Road will be designed as an all-weather facility, with new drainage structures designed to handle the minimum 50-year design storm in accordance with existing State requirements.

THREATENED AND ENDANGERED SPECIES

39. To avoid the potential downing of Hawaiian Petrels and Newell's Shearwaters by their interaction with external construction lighting, all lighting must be shielded after dark between the months of April and October.

40. No nighttime construction will occur during the peak seabird fallout period, between September 15 and December 15 annually.

41. Any streetlights that may be installed as part of this action will be shielded to reduce the potential for interactions of nocturnally flying Hawaiian Petrels and Newell's Shearwaters with external lights and man-made structures. This measure will minimize the threat of disorientation and downing of Hawaiian Petrels and Newell's Shearwaters and also comply with the Hawai'i County Code § 14 – 50 et seq., which requires shielding of exterior lights so as to lower the ambient light for the astronomical observatories located on Mauna Kea.

42. To minimize collateral damage to areas outside of the ROW and the risk of wildfire during construction, all construction activity shall be restricted to within the clearly-delineated ROW and entry and exit into the ROW by all construction personnel and equipment shall be at previously identified and marked non-sensitive areas.

43. The FHWA will contribute $50,000 to Hawai'i Volcanoes National Park for the propagation of *Haplostachys haplostachya* for out-planting at a suitable location.

44. Special Contract Requirements will be incorporated into the construction documents directing the contractor's work consistent with specific minimization commitments that are outlined in this section and in the BO for the project. The Contracting Officer will have the authority to shut down construction should violations of Special Contract Requirements be detected; furthermore, the project engineer will be responsible for ensuring compliance with all environmental restrictions and minimization measures.

At the current time there is no known conflict between Nēnē and the proposed W-7 alignment. If such a conflict arises, FHWA will address the issue with a multi-pronged approach utilizing measures detailed in the September 11, 2009, BO for activities in the recently constructed Section II of Saddle Road designed to minimize vehicle-Nēnē interactions. Field trials are being implemented between approximately MP 29 and MP 30.2, which may modify the measures, but as currently formulated, these include:

45. Erection of a permanent fence along both sides of the roadway within any section that appears to attract Nēnē on a regular basis.

46. Vegetation will be removed between the aforementioned fence and the edge of the roadway by the use of herbicides or by paving the area.

47. The loose gravel along the roadside in any such identified area will be secured with a tacking agent, or asphalt paving, so that Nēnē are unable to gather gravel for use in their crops.

48. FHWA will install enhanced Nēnē crossing and traffic advisory signs to warn motorists of the potential danger they pose to Nēnē along any such identified roadway section.

ARCHAEOLOGICAL, HISTORIC, AND TRADITIONAL CULTURAL RESOURCES

49. To comply with the MOA, the project will provide a pullout adjacent to the Old Waimea-Kona Belt Road if design standards permit, and fabrication of an interpretative sign, which will provide a history of the road.

50. In case of discovery of native Hawaiian burials or ritual sites, construction activities will cease in the vicinity of the site until appropriate regulatory and resource personnel are contacted and a determination has been made. All requirements of Chapter 6E, HRS and the administrative rules relating to burials will be satisfied.

51. In order to ensure the protection of archaeological and paleontological remains during construction, Section 107.02, "Protection of Property and Landscape" Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FPJ-96, 1996, FHWA will be followed.

52. During clearing, grubbing, and excavation, FHWA and HDOT will provide a full-time archaeological monitor on the project site.

HAZARDOUS MATERIALS, TOXIC SUBSTANCES AND UNEXPLODED ORDNANCE

53. If previously unidentified hazardous substances or petroleum products are found within the W-7 corridor that indicate an existing release, a past release, or a material threat of a release of any hazardous substance or petroleum products into the corridor, further investigation will be pursued, as warranted. If previously unidentified hazardous waste is discovered during project construction, work will cease at that location and appropriate regulatory or resource personnel will be contacted.

54. Prior to construction, FHWA will coordinate with the Army Corps of Engineers (USACE) on the need to conduct an unexploded ordnand (UXO) survey. If the risk of encountering UXO is low, then the USACE will be consulted to provide UXO construction support. If the risk of encountering UXO is high, then UXO clearance will be performed to ensure the safety of the site. The Army will document UXO surveys and removal actions in full accordance with applicable laws, regulations, and guidance. All ordnance found will be removed from the project area in accordance with DOA regulations in coordination with USACE and USAG-HI.

VISUAL

55. Final cut and fill slope faces will be made to blend with the surrounding landscape. The natural appearance of the slopes will be improved by rounding the toe and top of slopes, warping, blending the ends of slopes, varying the slope ratios, utilizing staggered ledges, and roughening the face of cut slopes, either by ripping or blasting, where appropriate. (Warping results in a slope face that is not parallel to the roadway. Slope rounding refers to

blending the slope into the natural terrain by excavating additional area at the top of the cut slope. Laying back the ends of slopes or blending provides a smooth transition to adjacent cut, fill, or drainage area by flattening the slope ratio at the ends of slopes. Varying slope ratios leaves an irregular, undulating or roughened appearance with staggered ledges rather than a uniform grade. Staggered ledges are benches with varying dimensions and heights on the cut face which do not cross the entire face.) The slope ratios will vary from the top to the bottom of the slope face as well as horizontally along the face, if practicable and feasible.

56. Rock slope surface treatment will be applied to cut slopes in competent rock areas as identified in the geotechnical testing results. These treatments include roughening of the cut face to incorporate short, staggered ledges, minor warping, and other irregularities in the rock that take on a natural appearance.

57. In areas not recommended for revegetation, the top three feet of lava material in disturbed areas will be stockpiled prior to construction. After construction, the stockpiled material will be used as plating material. The plating material will be placed over slope faces to resemble the adjacent, undisturbed ground surface conditions or used as rip rap material along ledges and outside of ditch backslopes.

58. Intercepted drainages on cut slopes will be cut at the angle to existing joints, planes or rock features, and drainage patterns.

59. Where guardrails are needed, natural-appearing guardrail material, such as naturally weathered steel or a material approved by HDOT, will be used to blend more effectively with the surrounding landscape.

60. To reduce contrast and blend more effectively with the surrounding landscape, aesthetic fencing materials will be used, such as naturally weathered metal or steel, or painted or wooden posts, as approved by HDOT.

61. Clearing of trees and large shrubs along an irregular edge adjacent to the recovery zone will be done to create a gradual transition or feathered edge.

62. As determined appropriate during final design, the project may include scenic pullouts with interpretive signage in a few locations, such as the Old Waimea-Kona Road and the overlook above Keʻāmuku Village.

CONSTRUCTION

63. The total amount of land disturbance will be minimized. The construction contractor will be limited to the delineated construction work areas within the ROW or clearly marked staging areas.

64. Construction traffic will be limited to military roads and the construction area as much as possible, particularly traffic related to hauling of crushed rock and asphalt, to minimize interaction with vehicular traffic on the existing Saddle Road. Traffic control will assure a safe and timely flow of traffic on the adjacent sections of Saddle Road during construction.

Traffic control plans will be an integral part of the construction documents and enforced by the Project Engineer.

65. Construction activities and traffic control will be coordinated with the Office of Mauna Kea Management to avoid potential conflicts with any observatory construction projects.

66. Environmental awareness materials will be provided to all persons, agency personnel, construction workers, subcontractors, inspectors, and others at the start the project. These materials will be prepared in a checklist format and will address issues related to caves, sensitive species, cultural resources, spill management, delineation of authorized work area, pollution prevention through recycling and other efforts required by the Pollution Control Act of 1990, and other relevant factors. Contract specifications addressing environmental mitigation and procedural requirements will also be included in the contract documents and will be enforced by the on-site project engineer throughout the duration of the construction contract.

67. Trucks will be covered when hauling loose material on public roads.

68. Unused materials and excess fill will be removed and disposed of at an authorized waste disposal site.

69. Dust control measures will be implemented. These may include but are not limited to the use of water trucks, the stabilization of the surfaces of stockpiled materials, and the treatment of unpaved routes with dust suppressants.

70. Clearing and grubbing of construction work areas will be conducted in such a manner as to minimize the amount of exposed soil at any one time.

71. Stationary equipment will be placed as far away from sensitive noise receptors as practical.

72. No smoking will be permitted during construction within the construction site, nor will any fires be permitted within the project corridor.

73. All exhaust systems will be maintained in good working order. Properly designed engine enclosures and intake silencers will be used. Equipment will be maintained on a regular schedule.

74. During construction, emergency spill treatment, storage, and disposal of all hazardous materials, both within construction limits and at staging areas, will be handled in accordance with the most recent version of FHWA's Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, (www.efl.fhwa.dot.gov/design/manual/Fp96.pdf), federal acquisition regulations, and appropriate EPA regulations. Special Contract Requirements shall specify that the construction contractor shall develop and adhere to "Good Housekeeping" and Spill Prevention Plans for all appropriate substances. Elements of the plan may include standards, procedures or activities such as:

- Onsite storage of the minimum practical quantity of hazardous materials necessary to complete the job;
- Storage and inventory of hazardous materials will be performed by designated and properly trained personnel;
- Storage of all materials in a neat and orderly manner, under roof and/or enclosed as appropriate and practical, as required by applicable OSHA and EPA rules;
- Products will be kept in their original containers unless unresealable, and original labels and safety data will be retained;
- Whenever possible, a product will be completely consumed before disposing of empty container;
- Disposal of surplus will follow manufacturer's recommendation and adhere to all regulations;
- Manufacturers' recommendations for proper use and disposal will be strictly followed;
- Daily inspection by contractor to ensure proper use and disposal;
- Onsite vehicles and machinery will be monitored for leaks and receive regular maintenance to minimize leakage;
- Manufacturer's recommended methods for spill clean-up will be clearly posted, and site personnel will be informed of the procedures and the location of the information and clean-up supplies;
- Materials and equipment necessary for spill clean-up will be kept in the material storage area onsite;
- All spills will be cleaned up immediately after discovery, using proper materials that will be properly disposed of;
- The spill area will be kept well-ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with hazardous substances;
- Regardless of size, spills of toxic or hazardous materials will be reported to the appropriate government agency;
- Should spills occur, the spill prevention plan will be adjusted to include measures to prevent spills from re-occurring and for modified clean-up procedures. A description of the spill, its cause and clean-up measures used will be included. If a major hazardous spill occurs, clean-up efforts will be coordinated through the Hawaiʻi County Fire Department and Civil Defense Agency, and the Hawaiʻi State Department of Health;
- The contractor will coordinate spill prevention and clean-up efforts. In addition, the contractor will designate at least three site personnel to receive spill prevention and clean-up training; these individuals will each be responsible for a specific phase of prevention and clean-up. The names of responsible spill personnel will be posted in the material storage area and in the office trailer onsite.

75. In order to encourage sustainable practices, the FHWA will implement the following:

- Encourage through contract specifications the use of durable materials that will require less frequent replacement, reducing the amount of construction waste generated over time;

- Encourage through contract specifications the use of material with recycled content, such as glassphalt, where possible and in accordance with accepted standards; and
- Encourage through contract specifications the reuse rather than disposal of project materials such as metal, wood, paper in other jobs where practical.

76. A manual outlining and discussing the environmental issues and commitments in this ROD, the 1999 ROD, and any other commitment documents (Biological Opinion, Memoranda of Agreement, etc.) will be prepared the FHWA.

77. Contract requirements will be incorporated into the construction documents directing the contractor's work consistent with specific mitigation commitments. Prior to construction of subsequent phases, all construction personnel will be required to attend a project orientation meeting where contract requirements will be reviewed. A project engineer will be on site at all times to ensure implementation and compliance with the contract requirements. The project engineer will have the authority to shut down construction should violations of the contract requirements be detected; furthermore, the project engineer will be responsible for ensuring compliance with all environmental restrictions and mitigation measures.

Coordination

In addition to extensive coordination during 1997 to 1999 associated with the original EIS, during the development of the SEIS stage of the proposal, FHWA, in partnership with HDOT, held interagency meetings and public hearings. To gather project development input from as many sources as possible, a citizen's Saddle Road Task Force (SRTF) that operated during the original EIS continued its work in soliciting and disseminating information about the project within Hawai'i County. FHWA mailed newsletters and numerous notices providing information and soliciting input to a mailing list of over 1,000 individuals, organizations, or agencies and also distributed information via a website.

The availability of the Draft SEIS was announced in the Federal Register on November 20, 2009, and in the Hawai'i State Office of Environmental Quality Control (OEQC) Environmental Notice on November 23, 2009. This initiated a comment period that extended to January 7, 2010, during which time agencies and the public were invited to provide written comments.

Two public hearings were held during the comment period in Hilo and in Kona on the Island of Hawai'i. The hearing in Hilo was attended by 108 members of the general public (non-Saddle Road team), and by 65 in Kona. In addition to testimony at the hearings, more than 50 citizens, organizations, and governmental agencies provided comments through letters, emails and faxes.

All comments and testimony received have been considered by FHWA in partnership with HDOT in the decision represented in this Record of Decision (reference: Final SEIS, Chapter 10 and Appendices A5 and A6).

Monitoring Program

The FHWA and HDOT will be responsible for overseeing all environmental commitments associated with the Saddle Road improvements, including the implementation of agreements pursuant to Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act.

Comments on the Final Environmental Impact Statement

The Final Environmental Impact Statement was circulated to other governmental agencies, organizations, and the public beginning February 23, 2010, and its availability was published in the February 26, 2010, Federal Register Notice of Availability. The Final Environmental Impact Statement 30-day review period ended on March 22, 2010. The following comments were received as a result of the Final Environmental Impact Statement circulation.

Mr. Michael Reimer was the only individual who submitted letters regarding the Final EIS. One each was submitted to FHWA Administrator Victor Mendez and to Dave Gedeon, Project Manager. These letters were in response to the reply that Mr. Reimer received from the FHWA for his Draft SEIS comments. Mr. Reimer was concerned that his comments were not given proper consideration from the FHWA. Mr. Reimer was concerned about the methods of analysis used in the preparation of the draft SEIS for Depleted Uranium (DU) and the FHWA's conclusion that there was no health risk in construction of the W-7 alignment posed by DU.

The FHWA carefully re-evaluated Mr. Reimer's original letter as well as the two additional letters received and determined that the original DU analysis was appropriate and sufficient and therefore no change in the language of the Final SEIS was necessary. The Environmental Protection Agency was the only agency to submit comments on the Final EIS and noted a lack of objection to the proposed project. All letters and responses are included in Appendix A.

Section 4(f)

Based upon the considerations presented in Chapter 7, Final Section 4(f) Evaluation, of the SEIS, there is no feasible and prudent alternative to the use of the land from the Waimea-Kona Road. The proposed action has the least harm to the Section 4(f) resources and includes all possible planning to minimize harm to the Section 4(f)property resulting from such use.

Conclusion

Based upon careful consideration of all the social, economic, and environmental evaluations contained in the Final Supplemental Environmental Impact Statement; the input received from other agencies, organizations, and the public, and the factors and project commitments outlined above, it is the decision of the Federal Highway Administration to select Alignment W-7 for

Section I of the Saddle Road (State Route 200) improvement project, from its junction with the Mamalahoa Highway (State Route 190) to Milepost 41, in Hawai'i County, Hawai'i. This alternative was identified as the Recommended Alternative in the Federal Highway Administration and Hawai'i Department of Transportation Final Supplemental Environmental Impact Statement (FHWA-HI-SEIS-10-01-F). All practicable means to avoid or minimize environmental harm from the selection of this alternative have been adopted and will be implemented as set forth in this Record of Decision.

Record of Decision Approval

03/31/2010
Date

Mr. Ricardo Suarez
Division Engineer
Federal Highway Administration
Central Federal Lands Highway Division

SADDLE ROAD (STATE ROUTE 200)
Mamalahoa Highway (State Route 190) to Milepost 42
County of Hawai‘i, State of Hawai‘i

SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT RECORD OF DECISION

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration (FHWA)
Central Federal Lands Highway Division

Appendix A

Comments on Final EIS and Responses

Michael Reimer
75-6081 Ali'i Drive RR-103
Kailua-Kona, HI 96740
February 19, 2010

Mr. Victor Mendez, Administrator
Federal Highway Administration
1200 New Jersey Ave., SE
Washington, DC 20590

Dear Mr. Mendez,

I thought you might be interested in an exchange of correspondence that has occurred regarding commentary I submitted on a Highway Project on the Big Island in Hawaii. I originally sent a commentary to a Supplemental Environmental Impact Statement as is freely solicited by such documents. I addressed only one issue, that of potential health risks to the workers on the project but nothing that would delay the project, and received what I consider a very condescending and criticizing reply for my effort. The response was by Mr. Gedeon of the Lakewood Colorado Federal Highway Administration Office sent on January 29, 2010, and referenced as HFPM-380.

In this case, the reply, couched in critical expression, addresses my concern in inaccurate terms to justify its own inadequate process that was applied to reach its conclusions, and pretends to be some expert authority. It fails in all regards. For example, I was criticized for not including extensive references but in my commentary I stated clearly that references would be supplied upon request. But the most damaging aspect is that such a denigrating reply discourages citizens from being participants in the democratic process of government. I am a retired geologist with some experience in transport in the natural environment of radionuclides and felt it worthwhile to provide a commentary on this issue. I did not represent myself in any way as an expert on this topic. My intent was to just perform what I considered a civic duty.

If the Department of Highways does not want citizen comments, openness, or transparency on Environmental Impact Statements, it should be clearly noted in the general request as published in the Federal Register that although comments are accepted by the procedure, they are not welcome.

Sincerely,

Michael Reimer

Michael Reimer

Michael Reimer
75-6081 Ali'i Drive RR-103
Kailua-Kona, HI 96740
February 19, 2010

Mr. David Gedeon
Federal Highway Administration
12300 West Dakota Avenue
Lakewood, Colorado 80228

Dear Mr. Gedeon:

Thank you for your January 29, 2010 reply on my commentary on the SEIS regarding the sampling program for depleted uranium on the Saddle Road, Hawaii County, Hawaii. I particularly appreciated the additional detail you provided on the sampling procedure that was not in the original report nor provided to me when I called and spoke AMEC representatives in Honolulu. This letter is a response to your reply.

As you note, I have not pronounced any objection to the construction of the Saddle Road bypass. I am just an old retired geologist with some previous experience on radionuclide transport in the environment and my concern is for the health and safety of the workers on the project. I was merely engaging in a civic duty and wanted to share my experience with you and do not feel that the condescending tone of the letter you sent to me was at all warranted. Even if the conclusions you state are correct, they are clouded if the improper path was chosen to reach those conclusions.

It is somewhat perplexing that you do not seem familiar with the information I presented, seemingly placing a burden of proof upon me to state references. I was not, with my comments, seeking to solicit a response nor did I represent myself as an expert. From your response, I should be able to presume that you or someone with whom you are in contact is very knowledgeable with the DU issue, from health effects to the analytical challenges. Therefore, you should be familiar with the sense of my concerns at least to the minimal extent that you recognize not everything is black and white in this field of emerging science.

Subsequently, your dodge of not being able to address my statements because I did not provide a reference to them is rather specious. This is information I am sure is readily known by you or your experts. In addition, I offered in my commentary of the draft SEIS to provide references upon request. Seemingly, it became easier for you to criticize than to seek fully the information.

It is clear from published reports in the 1990s and early 2000s that health risks from exposure to DU were minimized, and is it not surprising that there were various sides championing their cause. The military, national laboratories, and the health physics community's interpretation of studies was to claim little or no risk from exposure and that of anti-radiation activists was to show elevated risk to DU exposure. In recent years, that has changed and emerging science does indicate potential health effects not only from imbedded DU but from inhalation. The showing today is that DU and its alloys are a probable carcinogen, teratogen, and even have an ability to transverse the blood-brain barrier, possibly impacting cognitive ability. Here is a reference you can seek if your staff cannot find one. (Hardin, R., Brugge, D, and Panikkar, B., 2005, *Environmental Health: A Global Access Science Source* 2005, **4**:17.)

You are also quick to criticize me for what you consider to be incomplete comments or unsupported claims. However, you sir, are the paid expert and engage fully in presenting comments in the manner for which you criticize me. Let me offer an example from your response. You address the protocol with a comment on the sieving procedure. You state that samples are sieved at 2 mm is because it "Removes unwanted debris like grasses, rocks, etc."

First, I presume you would want me to believe there are no organic materials present that are less than 2 mm in size. Second, I do not know what you mean by "rocks." Sieving classification following numerous protocols, including the AAHSTO protocol, use terminology for larger than 2 mm as boulders, cobbles, gravels, pebbles, granules and occasionally coarse sand, but never rocks. There is no descriptor called rock. Yet your statement claims to eliminate rocks. Here for your convenience, I will provide a reference source. Visit the following site for a table (8.8) showing the terminology of the different protocols. http://www.engr.uconn.edu/~lanbo/G229Lect06122SoilProfile.pdf

Additionally you state that "…it is well known that metals are generally particulate bound." Yet you give no reference in your letter nor was there one in the SEIS to support that claim is applicable to DU particulates in the climate zone and soil types related to PTA and the Saddle Road bypass. Is that not a fair recognition on my part that you criticize me for the same approach you use?

Make no mistake about it, sampling and analyzing for depleted uranium at the levels of interest is very difficult. From previous work done on the Big Island by the U.S. Army, it is clear that they are not finding DU in their collected samples, either airborne or soil that they analyzed. For the Saddle Road analysis, that information from the Army was available when this study was initiated and the extreme sensitivity needed to find DU was seemingly ignored. If not, there is nothing improper in mentioning the fact that the limits of detection are beyond the present capabilities of the protocols used.

One should not make claims that cannot be supported by action of the protocol. For example, one could state that DU was not present at the concentration levels provided by the protocols but one cannot claim DU is not present. You know full well that by collecting and mixing samples from 50 locations, it is highly probably that any DU present as a deposited aerosol particle at just one of those locations would be missed as it is subject to dilution by that factor of 50. You trade a gain in homogeneity for a loss in sensitivity. You could have just as easily analyzed the 50 samples individually and then averaged them getting the extra advantage of some measure of the variance.

There is no sense arguing the trite matters of this measurement process as you are clearly biased toward justifying the non-interfering conclusions you sought. If you want to rigidly believe that natural uranium activity ratio of 234/238 is steadfastly between 0.5 and 1.2 and DU is always 0.18 without variance (see Bleise et al., 2002, for your convenience (http://www.iaea.org/NewsCenter/Focus/DepletedUranium/properties.pdf)), and without regard to the processing procedure or materials separated, and that no mixing can occur in the natural environment to generate intermediate values, then there is nothing I can say or do to convince you otherwise. The entire DU issue is still emerging science and to pretend otherwise is to distort the learning process.

Sincerely,

Michael Reimer

Michael Reimer

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228

March 4, 2010

In reply refer to: HFPM-16

Michael Reimer
75-6081 Alii Drive RR-103
Kailua-Kona, HI 96739

Dear Mr Reimer:

This letter is in response to your letter to Mr. Victor Mendez, dated February 19, 2010. We were very sorry to hear that you did not feel that our office took your comments on the Saddle Road Improvement Project seriously. We sincerely value public input on our projects and consider all input received in our project decisions. We especially appreciate thoughtful, detailed letters such as yours, which address specific concerns. Your letter was thoroughly reviewed and a point-by-point response was sent to you, and included in the Final Supplemental Environmental Impact Statement.

Your December 30, 2009 letter had concerns about the methodology by which we determined that Depleted Uranium was not present in levels above background. Your comments were reviewed thoroughly by the technical expert that prepared our original analysis. We provided a detailed response in part so that you could see that we did, indeed, take your comments seriously and gave thought to each point that you raised. In the end we disagreed with your assessment of the health risk from Depleted Uranium, and disagreed with your assertion that our analysis was inadequate. Based on this, we have determined that additional precautions are not warranted.

We appreciate your participation in the process and we apologize if our response to you did not fully convey this appreciation.

If you have any further concerns or questions regarding this project, please contact me at 720-963-3444 or Dave Gedeon, Project Manager, at 720-963-3723 (Dave.Gedeon@dot.gov)

Sincerely yours,

Ricardo Suarez, P.E.
Division Engineer

RECOVERY.GOV

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Michael Reimer
75-6081 Ali'i Drive RR-103
Kailua-Kona, HI
December 30, 2009

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STATE DEPARTMENT
OF TRANSPORTATION
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Ms. Katherine P. Kealoha
Office of Environmental Quality Control
235 Beretania St. Suite 702
Honolulu, HI 96813

Mr. Ken Tasuguchi
Highway Division Planning Branch
Room 301
869 Punchbowl St.
Honolulu, HI 96813

Dear Ms Kealoha and Mr. Tasuguchi:

Thank you for the opportunity to review and report on the SEIS for the saddle road realignment project.

My review is limited to the Section 3.7.1.3 (pp. 3-60, 3-69) of the main report and Appendix E of the addendum; these are the sections dealing with interpretation and conclusions from the additional analysis of soil samples collected for depleted uranium (DU). Unfortunately, the additional study did nothing to improve the uncertainty already at hand regarding the presence of depleted uranium (DU). In effect, the amount of DU present in the PTA area is still unknown and therefore, it is speculative at best.

However, this shortcoming should not prevent progress on the Saddle Road Planning and development. It is possible to take adequate precautions at minimal cost during construction to reduce the possible risk of exposure to DU. Some suggestions are made in the Summary of the report.

Unlike previous studies conducted by Cabrera at PTA for 10 soil samples, this study did reflect some attempt at improvement in that there were two types of analytical procedures used and the report contains information regarding blank and replicate analyses. ICP-MS and alpha spectrometry were used in an attempt on 5 soil samples to determine the uranium isotopic composition of the collected samples. However, the knowledge gained from the previous sampling regarding the need for higher precision in analyses was not applied to the Saddle Road Bypass study and the results remain inconclusive.

The most unfortunate part of the issue is that there exists the technology and methodology to obtain results that would answer the issue of the amount of DU present or carried by air transport along the proposed bypass route for the Saddle Road. These have been available since 2002 and have been used in other reports on DU. As it stands, what is being reported is an analysis of uranium and not DU, if present. One could plausibly argue from the data provided that significant amounts of DU are present. But this would be as questionable as attempting to argue the contrary. It is not necessary to present a simulated projection when analytical methods are available to answer the question whether or not DU is part of the measurement.

In addition, in the last few years, recent studies have become available to indicate that natural uranium and DU present significantly different health effects. The basis is the form of the element and includes the presence of oxides of uranium that have a very different residence time in the human body compared to the element uranium. Further, risk to humans involving DU is an evolving field of study with such indications now that DU is transported through the nervous system and that the DU alloy may participate in tumor growth and metastasis.

In summary, the DU studies for the PTA area conducted for the Hawaii Department of Transportation provide no substantive information that clarifies the concerns previously posed and certainly add no value to any computed risk analysis. This conclusion is supported by the U.S. Army Installation Management Command, Environmental from Depleted Uranium M-101 Spotting Round For Pohakaloa Training. In that document they state, "A Baseline Human Risk Assessment (BHHRA) has not been performed for Pohakuloa Training Area. Only a few fragments were found as discussed above, and presented little evidence of oxidation. The only measurements above natural background were in the immediate vicinity of these fragments."

One can reasonably conclude that in the subsequent 40 years since the M-101 DU Spotting Rounds were used, continual disturbance to the site through live fire exercises has dispersed the DU into small fragments over a large area and probably partially buried those fragments. This contributes to the oxidation of the DU, a form that is readily mobile as an aerosol.

In view of this information as presented in the SEIS, it would be prudent as the relocation road is being constructed, that the workers should be appropriately protected and at a minimum should be wearing dust masks or even respirators. One should consider that even the clothing could be disposable and on-site showers made available so no dust is carried to the workers' residences. Continued and adequate air particulate monitoring should occur throughout the construction.

Keeping in mind that the precautionary steps are not only for any DU that may have been transported to the relocation sites but from any DU that may become airborne from the PTA firing range sites, full precautionary measures would require that no live fire training exercises take place in the Pohakuloa area during the construction of the Saddle Road bypass.

Sincerely yours,

Michael Reimer

Michael Reimer, Ph.D. retired geologist

SUPPORT COMMENTARY

Uranium is a naturally occurring element; its chemical symbol is U. It has the largest nucleus of naturally occurring elements. It is also radioactive, meaning it releases energy as changes to its atomic structure occur, mostly in the nucleus. In the classical sense, the nucleus is composed of protons and neutrons. It is the number of protons in an atom that define it as an element. Uranium has 92 protons. For most elements, the number of neutrons in the nucleus can vary. When an element has a different number of neutrons, those forms are called isotopes. Natural uranium has 3 isotopic configurations; these three have the same number of protons but different numbers of neutrons. Adding the number of protons and neutrons gives the atomic mass. For uranium, these masses are usually written 234-U, 235-U, and 238-U.

Each of these isotopes decays radioactively. They decay at different rates and the rate at which they decay is referred to as the half life, meaning half of the amount present will decay in a certain time. Energy is given off as the element decays and, again, the classical decay energy is represented by three forms of energy release, the alpha particle, the beta particle, and the gamma ray. For the most part, the element when found has all isotopes occurring together. Isotopes do not equally make up an element but occur in different proportions. There are some physical processes that can separate the isotopes into different proportional fractions. This does occur to a minor extent with U in the natural environment, particularly between 234-U and 238-U.

The table below shows the different percent of natural occurrence, half lives and the primary energy release of the U isotopes.

ISOTOPE	PERCENT OF OCCURRENCE	HALF LIFE	RADIATION
234-U	0.0054	240,000 years	alpha
235-U	0.72	704 million years	alpha
238-U	99.27	4.5 billion years	alpha

TABLE 1

These half lives are very long, measured in hundreds of thousands to billions of years. All decay with the release of an alpha particle. An alpha particle consists of 2 neutrons and 2 protons and is essentially the nucleus of a helium atom. An alpha particle is very energetic and massive as far as ionizing radiation is concerned. Alpha particles emitted from natural isotopes have about 5 million electron volts energy it can transfer to atoms along is ejection pathway. It does not travel very far, around 5 centimeters in air and only 5-10 micrometers in cellular tissue, about the size human lung cells, and in the range of the 7 micrometer human red blood cell. Its energy transfer is very efficient and it ionizes atoms along its path and can beak chemical DNA and RNA bonds in cells.

When an atom decays with the loss or gain of protons, it becomes a different element. For the uranium isotopes, all the following elements are also radioactive emitting energy and nuclear particles until they become lead, chemically abbreviated Pb (after the Latin name for lead, plumbum). Lead has 82 protons and also has isotopes, that is, differing numbers of neutrons in its nucleus. It is a stable element.

Uranium exists everywhere in minor and trace amounts. The crust of the earth has an average concentration of 1 part U per a million parts of other elements. It is higher in continental rocks and lower in oceanic rocks. For example, it is about 4 parts per million in the California granites but only one-half part per million in Hawaiian basalts that make up the island chain. Uranium also exists in food we eat, the water we drink, and to a minimal extent, as particle in the air we breathe. It occurs in our own bodies, averaging about 90 micrograms, mostly in the bone and liver. A 160 pound person weighs 73 billion micrograms so you can see the human concentration of uranium is much less than the crustal abundance, by nearly a factor of 1,000. When an element is concentrated in an area much greater than its average occurrence and can be collected and separated economically, it is called an ore deposit.

One isotope of uranium, 235-U has certain physical properties that make it particularly applicable to uses in nuclear physics. Its nucleus can capture a neutron at a higher rate than either of the other two naturally occurring U isotopes. When this happens, 235-U goes through a different radioactive decay process called fission. That is, it splits into two or more fragments containing all the neutrons and protons and emits a great amount of energy, including some unattached neutrons that could be captured by other 235-U atoms if nearby. If the released neutron energy is controlled to a high degree, the nuclear reaction is controlled so that a nuclear reactor can be constructed. If it is controlled to a lesser degree, nuclear weapons can be constructed.

In order to construct those devices, the amount of 235-U must be concentrated to a level higher than its natural occurring percentage. In order to do this, uranium ore is processed in special factories to extract 235-U. What remains is very pure U that is depleted in 235-U and on a percentage basis, concentrated in 238-U. That remainder after processing is called depleted uranium. During the cold war, literally hundreds of thousands of tons were produced. It found both civilian and military applications. The military application most commonly used was to manufacture munitions, typically alloyed with other metals because pure uranium, if fine enough, can burn spontaneously in contact with air. As a bullet or artillery shell, it is denser and harder than lead (Pb) and could penetrate the armor of battlefield vehicles easier than the lighter, softer lead.

Some of those munitions were used at Pohakuloa Training Area in the 1960s. What wa used was a spotting round or marker round for a larger nuclear weapon that went out about 2 miles and landed on the surface giving off a puff of smoke. The exact amount of DU used is not known but could exceed 700 or pounds of depleted uranium. Now seven hundred pounds does not seem like a lot; an average sized pickup truck can hold more than that. But in the basaltic rocks at Pohakuloa, with its average uranium concentration of only 0.5 ppm uranium, it is an enormous addition. It is as much uranium that exists naturally over 3 square miles to a half-foot depth. In other words, your cancer risk from exposure on those three square miles are doubled according to the U.S. EPA's approach of defining risk to radiation on a linear no-threshold basis.

Uranium is considered to present two types of health concerns. It is both a toxic metal and it emits radiation. As a toxic metal, it is highly unlikely to be ingested in quantities sufficient to be a heavy metal poison as the common concern of ingestion of lead by children. As a radioactive substance, the half life is very long and alpha particle emission is quite slow. It takes a lot, on the order of pounds, of uranium alloy metal to present a radiation hazard if it is sitting a few feet from you. But there is a means in which a uranium hazard can be brought to you from those few contaminated areas at PTA. If the remnants of the spotting rounds oxidize or are blasted into finer fragments either by live fire or vehicles running over them, those particles can become aerosols and be carried in the air. Although the larger particles (10 micrometers) will settle more quickly than finer ones (less than 1 micrometers), they can again become aerosolized by mechanical action and carried to a new location by movement of the air. The finer particle can be carried for miles and reports have been made of finding those up to 26 miles from the source.

The inhalation of uranium as aerosols into the lungs provides a radiation hazard as the uranium is sitting among lung cells and is irradiating them with the very energetic alpha particle. Depending on the size of the aerosol (nanoparticle), it could contain millions or billions of uranium atoms. This is very unlike inhaling the same size particle with only 1 part per million U embedded in some crystalline rock matrix made mostly of silicon and oxygen. Aerosols are very small particles that can become airborne and remain airborne for quite some time. They typically range in size from 0.001 to 10 micrometers. Ten micrometers is 4 ten thousands of an inch. As is typically used in comparison, the diameter of a human hair is about one thousandths of an inch. So ten micrometers is about half the diameter of a human hair.

Without getting into the health physics aspect, such as what size particle gets deposited where in the respiratory tract, it is reasonable to say that it is inhalation that presents the greatest health risk. In addition, it is likely that both radiation and metal toxicity are probable risk factors.

What this means is that if a particle of depleted uranium becomes airborne, it can be carried quite some distance from where the depleted uranium is located. Although there are some arguments that the particles cannot move very far, on the order of a few hundred feet, this applies only to certain aerodynamic conditions such as with the largest particles. You have probably heard that massive amounts of dust particles (larger than aerosols) are carried by strong winds from Asia to Hawaii. From your own personal experience, think of the sea salt and some minuscule sea organisms (algae) that deposit themselves on your car windshield even though you may have been far from the sea. It is therefore highly likely that the smaller aerosols are carried from the PTA source across any land mass presented by the Big Island, again dependent on the aerodynamic conditions.

This leads to the question of whether or not depleted uranium can become airborne. Depleted uranium has been detected in aerosol samples collected at other sites where depleted uranium has been used on the mainland and certainly in Kosovo and Iraq. On Hawaii Island, spotter rounds weighing about 6 ounces of DU were used. Upon impact, these were supposed to explode and release a cloud of some material in order to determine where the spotter round had landed. This type of explosion is very different from the anti-armor rounds fired by the military. The military rounds were designed to burn upon impact that would immediately create aerosols. In contrast, the spotter rounds would release very little aerosol upon impact and explosion. Certainly the large metal fragments are not going to be blown about in the wind but as the fragments remain in the open, they do oxidize as has been seen by a yellow coating on the fragments. They oxidize more quickly in Oahu than Hawaii because of the higher moisture concentration where they were used. Oxidization is like rust. Run your hand over a rusty car fender and look at your hand. It is covered in fine particles of iron oxide rust.

One major unknown is how many times the area where the spotting rounds were used was engaged in live fire exercises. Airborne bombing, artillery shells, vehicular traffic all would contribute to making the spotting round fragments smaller and burying them under rock or soil where they would oxidize faster. More live fire and these fragments and oxides are churned again and again with the potential of releasing the oxides to the atmosphere.

SAMPLING AND ANALYTICAL PROCESS

Five soil samples were collected from the proposed realignment route of the Saddle Road. The collection methodology was developed by AMEC and reported as a protocol in the SEIS report. This document was not included in the SEIS and I contacted AMEC by telephone to determine the salient points of the protocol.

To the best knowledge of AMEC, the sample was sieved so no particles larger than 2 millimeters were included and they do not know if any organic material was excluded (grasses, etc.). Two analytical methods were used, the ICP-MS and alpha spectrometry. That is a good selection but did not provide analysis of all uranium isotopes. The amount of sample is unknown as is any dilution process for the ICP and procedures for the alpha spectrometry.

"Fingerprinting" is a term used in this study for seeking clues that may indicate if depleted uranium is present in a sample. Analyzing for uranium will not reveal the difference between natural and depleted uranium unless there is an inordinate amount of uranium found that is not associated with some ore forming process. Complete isotopic analysis will reveal the difference.

As a brief review, all isotopes of uranium are radioactive and primarily decay with the emission of an alpha particle. Natural uranium contains three isotopes that are the same chemically but have a different number of neutrons in the nucleus that gives them different nuclear characteristics. The isotopes are written as 234-U, 235-U and 238-U. The nuclei contain 142, 143, and 146 neutrons respectively. There are different concentrations of these isotopes in nature, as well. The previous Table 1 shows these differences. The simplified Table 2 below shows the symbols, primary radiation energy release, half life and the decay product (modified from NY Department of Health).

Symbol	Element	Radiation	Half-Life	Decay Product
U-238	Uranium-238	alpha	4.5 billion years	Th-234
Th-234	Thorium-234	beta	24.1 days	Pa-234
Pa-234	Protactinium-234	beta	1.17 minutes	U-234
U-234	Uranium-234	alpha	247,000 years	Th-230
Th-230	Thorium-230	alpha	80,000 years	Ra-226
Ra-226	Radium-226	alpha	1,602 years	Rn-222
Rn-222	Radon-222	alpha	3.82 days	Po-218
Po-218	Polonium-218	alpha	3.05 minutes	Pb-214

Pb-214	Lead-214	beta	27 minutes	Bi-214
Bi-214	Bismuth-214	beta	19.7 minutes	Po-214
Po-214	Polonium-214	alpha	1 microsecond	Pb-210
Pb-210	Lead-210	beta	22.3 years	Bi-210
Bi-210	Bismuth-210	beta	5.01 days	Po-210
Po-210	Polonium-210	alpha	138.4 days	Pb-206
Pb-206	Lead-206	none	stable	(none)

TABLE 2.

An alpha particle decay results in a different element with a lower atomic number and atomic mass, while a beta decay results in an isotope of the same atomic mass but a different atomic number. Interestingly, 234-U is part of the decay chain of 238-U.

235-U is an isotope with nuclear characteristics that are of interest in building reactors or bombs. It has the affinity to easily capture a neutron and then fission. Fission is a decay process where the nucleus splits into two or more large pieces and releases energy and neutrons, and other radiation in the process. When the rate of the released neutron capture is slowed for the amount of fissionable isotope present as controlled in a reactor, it generates heat. When the rate of capture is less moderated and more fissionable isotope is present, it can react explosively and is the basis of an atomic bomb.

The amount of 235-U in natural uranium today is insufficient to generate these fission reactions*. Therefore, 235-U is concentrated so it can be used in nuclear reactions. When it is separated from natural uranium, the remainder is called depleted uranium.

Interestingly, there is a documented case in geologic history when the 235-U isotope was in greater concentration where there was a natural atomic reactor. For those interested, more information about this unique natural phenomenon can be found at* http://en.wikipedia.org/wiki/Oklo**

That isotopic manipulation gives an opportunity to determine whether the uranium is natural or depleted. By analyzing the isotopes, if the percentage of 235-U is lower than its naturally occurring counterpart, it is likely depleted uranium. The separation process gives another fingerprint clue. In separating out 235-U, some 234-U is removed as well. Ideally then, if the ratio of 234-U to 238-U is lower than its natural counterpart; it too may be a clue to determining whether the uranium is natural or depleted.

That is typical of separation from purified uranium ore but that isn't all the possibilities. Depleted uranium can also be separated from reactor fuel rods. The once enriched rods have burned up most of the 235-U. In effect, the fuel rods are now depleted uranium plus a lot of other isotopes created when the nucleus of those other atoms capture a neutron. For example, in the uranium family, the fuel rod can contain 236-U and even after separation of uranium, some traces of other radioactive isotopes are found, such as 237-neptunium and even 239-plutonium, both man-made isotopes as they do not occur naturally.

It is not known whether the DU projectiles used at PTA are from the first purification of uranium ore or reprocessed fuel rods but it is a relatively straight forward process to determine that unknown. Pieces of the spotting rounds have been found; simply analyze the found rounds to answer this question.

Still another means is possible. The spotting rounds are reported to be an alloy of uranium and molybdenum. Analyses of materials looking for DU should include molybdenum and any other material that might have been used in alloy process, again determined from analyzing the spotting rounds.

The current air monitoring program is not capable of finding DU or any surrogate simply because it is not looking for any. This is true for soil analysis as well. Depleted uranium is defined as uranium from which 235-U has been selectively removed, often about half or two-thirds removal. As previously mentioned, the 234-U isotope during the process of concentrating 235-U is often depleted as well. The analytical methods employed often do not analyze specifically for 235-U (it is below the detection limit). Quite often then 234-U is used as a surrogate for interpreting whether a sample is DU or natural uranium. If 234-U is not lower than its natural abundance concentration, it is often and erroneously concluded that the uranium is natural uranium. This is wrong because even in the natural environment, 234-U is quite variable due to several physical and chemical factors. For a time, 238-U decays by alpha emission into 234-Th. Thorium has different chemical affinities than uranium and the two elements may not move together. Eventually, 234-Th decays by beta emission to 234-U. Thus, there is a range of ratios of 234-Th to 238-U. This range is 0.5 to 1.2 as determined by Sansone and others, 2001 and quoted in an incomplete reference in the SEIS, Appendix II.

This is an important point as it is being improperly applied in interpreting the results of soil analysis for depleted uranium.

Table 3 below compares percentages of uranium isotopes by weight and activity in natural and depleted uranium.

Isotope	Relative isotopic abundance			
	Natural Uranium		Depleted Uranium	
	By weight	By activity	By weight	By activity
U-238	99.28%	48.8%	99.8%	83.7%
U-235	0.72%	2.4%	0.2%	1.1%
U-234	0.0057%	48.8%	0.001%	15.2%

TABLE 3

In Table 3, the activity ratio of natural 234-U to 238-U is 1. They have the same activity as would be expected from an undisturbed physical process. In reality, the range in soils is variable because some natural processes can separate 234-U from 238-U.

Soils are derived from rocks by physical and chemical processes that break down the rock into finer particles. The primary processes are largely dependent on the local climate zone. If it rains a lot, the water can interact with the elements in the rock, dissolving some and carrying away some. You are familiar with how acid rains can rapidly dissolve some rocks or even leach elements from building roof materials and create problems with impurities in catchment systems. In colder climate zones, such as found in Hawaii on the higher regions of Mauna Kea and Mauna Loa, freezing and thawing help break up rocks. Wind can take finer grains and they can impact larger particles and mechanically break them just as sand blasting can erode away the paint on buildings or the unsightly weathering of stone buildings to expose a fresh surface. Moving water can do the same thing as it carries sediment along erosion pathways, including streams, rivers, and even intermittent flows in gullies or surface swales. Plant growth with the root systems can help create soils and leaves organic materials behind that can also interact with rocks to generate soils.

Soil generation takes time. You can see this on Hawaii as there is more soil on older lava flows and more in regions with greater rainfall. As mentioned before, thorium can separate chemically from uranium or be more easily leached from the mineral grains in which it is contained. Most commonly, the activity ratio can be less than one, because it has been removed. Therefore the 234-Th to 238-U ratio in soils is disturbed and is not the equilibrium perfect one to one ratio. 234-thorium is also removed during a uranium isotope extraction process and the ratio would also be less than one. Here is where the misinterpretation of soil analyses come into being.

Much of the PTA area is barren of soils. The lava flows are recent. The soil samples at PTA were collected from gullies or swales where water had moved some soil. The soil at these locations is a mix or combination of all soils from different areas over which water carrying it had flowed. The 234/238 isotopic uranium activity ratios vary within the natural range found in soils with an occasional lower value or two. The question arises is how do you know the lower value is not reflecting a mixture of depleted uranium with lower 234-U and natural uranium also with lower 234-U. The answer is, you can't. So to interpret the low 234-U ratios as not being from depleted uranium is incorrect. If the ratio were that freshly processed 234/238 (0.18 from table 1), then it would be clear that it is from depleted uranium. But the sample may contain a fraction of DU and Natural uranium because it is a mix of sediment or soil brought together by flowing water from vast drainage areas.

You will notice from the report that the ratios are averaged to diminish the impact of the lower samples. An average is an improper application as it tends to hide the anomalies that can be outliers from the normal data range.

Here is an example to demonstrate the problem with averaging. Suppose the playgrounds of 5 schools were tested for arsenic. In Hawaii, arsenic in soils ranges from about 1 to 5 parts per million. EPA would generally say any contaminated area should be cleaned up to the normal background. The results of the school yard analysis are: 1.1, 0.9, 1.2, 1.1, 10.2 parts per million. Yes, one analysis is 10.2 ppm, over 2 times the highest natural background found in Hawaii. Why might it be so high? Let's presume the school site was a former lumber treatment yard for applying termite resistant materials to lumber that contained arsenic. Is it a problem? Simply average the 5 analyses and you get 2.9, well within the normal range of arsenic on the island. So, it is easy for some authority to claim the average is within normal limits and there is no need for concern; yet children are exposed nearly daily to twice the arsenic limit normally found in Hawaii. Clearly, the individual children at all schools do not have the same risk.

This is the same result that can occur when you mix soils, one or more that can come from an area contaminated with depleted uranium and the others from areas with only natural uranium. The 234/238 ratio of one sample taken along the saddle road proposed bypass was 0.74 that individually is quite lower than the average of 1.16. It could easily be a mix of DU at 0.18 and the average provided by natural variability. The situation with the Saddle Road Bypass sampling is further complicated by the fact that DU is probably not transported in by water movement but by air transport. The DU contaminated aerosols would then have to drop and realistically the likelihood of it being in one of the sites from which the 5 samples collected is miniscule but probable. From the analyses that were performed, it cannot be discounted. Aerosols can be remobilized with mechanical disturbance.

This discussion would not be complete without stating that the isotopic analysis of uranium at these concentration levels is very difficult. Techniques to accomplish this have been available since 2002 but do not appear to have been used here.

It is unfortunate in that the refinement to risk analysis could be greatly improved but that is not possible here. The risk determination is based on too many assumptions and presumptions to have any meaningful application. If one selects to err on the side of caution, it must be assumed that DU is present.

SUMMARY RECOMMENDATIONS

The State of Hawaii is to be commended in attempting to resolve the DU risk to workers participating in the realignment of the Saddle Road. The results unfortunately do nothing to assist in that risk determination.

The information provided by the additional DU studies addressed in the SEIS should not be used to provide a false impression that there is no potential hazard from DU. However, that issue should not prevent the planning and construction from going forward.

In view of this information as presented in the SEIS, it would be prudent as the relocation road is being constructed, that the workers should be appropriately protected and at a minimum should be wearing dust masks or even respirators. One should consider that even the clothing could be disposable and on-site showers made available so no dust is carried to the workers' residences. Continued and adequate air particulate monitoring should occur through out the construction.

Keeping in mind that the precautionary steps are not only for any DU that may have been transported to the relocation sites but from any DU that may become airborne from the PTA firing range sites, full precautionary measures would require that no live fire training exercises take place in the Pohakuloa area during the construction of the Saddle Road bypass.

REFERENCES

Pertinent references will be provided upon request

U.S. Department of Transportation
Federal Highway Administration

Central Federal Lands Highway Division

12300 West Dakota Avenue
Lakewood, Colorado 80228

January 29, 2010

In Reply Refer To:
HFPM-380

Michael Reimer
75-6081 Alii Drive RR-103
Kailua-Kona, HI 96739

Subject: Response to Comments on Saddle Road Improvement Project Draft Supplemental Environmental Impact Statement, Island of Hawai'i

Dear Mr. Reimer:

Thank you for the letter on the SEIS. In response to your specific comments:

Report shortcomings
FHWA and HDOT disagree that there are shortcomings regarding the human health risk assessment report prepared by AMEC. However, we appreciate that your evaluation has led you to the conclusion that the project should not be delayed. We surmise that you do not feel that a significant health risk from DU exists from either road construction or use of the road.

Need for higher precision in analysis
We disagree with this statement. Precision is defined by the U.S. Environmental Protection Agency as "a measure of mutual agreement among individual measurements of the same property usually under prescribed similar conditions." AMEC utilized HDOH and ASTM guidance documents and accepted scientific principles and practices in designing its sampling protocol. Soil samples were collected at five distinct locations along the proposed W7 alignment. These samples were collected using multi-increment sampling methods, which significantly reduces the probability of obtaining false negative results and provide a better measurement of the true concentration. Each multi-increment sample was comprised of approximately 50 individual soil "increments" collected across a 10,000 sq ft area (defined as decision units) using a systematic random sampling approach. The relatively large multi-increment samples were thoroughly homogenized and subsampled in the laboratory in accordance with ASTM Standard C999-05, *Standard Practice for Soil Sample Preparation for the Determination of Radionuclides*. Implementation of the described sampling procedure minimizes the effects of soil heterogeneity and provides a more accurate representation of average concentration within a decision unit.

Additionally, one of five decision units evaluated (Decision Unit 2) was sampled in triplicate. Sampling and analyzing replicate samples allows for the specific evaluation of precision, which indicates sampling representativeness. It is a measure of reproducibility and can be completed without comparison to an assumed or known value and is traditionally expressed as a relative standard deviation (RSD) for field triplicate samples. The three replicate samples collected from Decision Unit 2 contained ^{238}U at 130 µg/kg, 100 µg/kg, and 110 µg/kg and lead at 2.8 mg/kg, 2.0 mg/kg, and 2.4 mg/kg. The calculated RSD for this sample set is 13.5% for ^{238}U and 16.7% for lead, which is well below the data quality objective goal of 30%. According to Section 4.2.5.3 (Evaluation of Replicates and Data Representativeness) of the *Technical Guidance Manual for the Implementation of the Hawaii State Contingency Plan*, "...an RSD% of approximately 35% or less indicates the amount of estimated total error is within a reasonable range for decision-making." Therefore, we are confident that the sampling program carried out by AMEC resulted in analytical results with a high degree of precision.

There exists the technology and methodology to obtain results that would answer the issue of the amount of DU present or carried by air transport along the proposed bypass route for Saddle Road. These have been available since 2002 and have been used in other reports on DU. As it stands, what is being reported is an analysis of uranium and not DU.
Unfortunately, you did not provide reference to the technologies and methodologies you are referring to. AMEC has provided significant backup to its sampling and analytical procedures. Uranium isotope analysis was conducted by Test America, St. Louis, which has the reputation as being the best in the industry in radionuclide testing. As you have indicated, AMEC utilized multiple laboratory techniques to measure uranium isotopes. The first method utilized Inductively Coupled Plasma-Mass Spectrometry (ICP-MS), which is theoretically more sensitive and provides lower detection limits for ^{235}U and ^{238}U. The second analytical method utilized was alpha spectrometry. Alpha spectrometry results were expected to provide greater precision and lower detection limits for the ^{234}U isotope in comparison to the ICP-MS method.

Your statement that what was being reported was an analysis of uranium and not DU is erroneous. The analysis for DU must originate from the analysis of individual isotopes of uranium, specifically from the analysis of the three predominant and relatively stable isotopes, ^{234}U, ^{235}U, and ^{238}U. Determination of DU presence is generally made from the relative abundance of the three isotopes in relation to each other. Generally, $^{234}U/^{238}U$ and $^{235}U/^{238}U$ activity ratios are significantly reduced in DU relative to natural U. Conversely, $^{234}U/^{238}U$ and $^{235}U/^{238}U$ activity ratios are substantially elevated in enriched uranium (EU) relative to natural U. According to the reference document cited in AMEC's report (Sansone et. al., 2001), $^{234}U/^{238}U$ activity ratios for natural U in soil typically range from 0.5 to 1.2. The range of $^{234}U/^{238}U$ activity ratios measured in soil samples collected by AMEC ranged from 0.74 to 1.79. Consequently, we conclude that negligible amounts of DU (if any) are present in surface soil at the Site. Furthermore, the absolute concentration of total U in surface soil at the Site is well within the accepted range of background (or naturally occurring) concentrations.

Recent studies indicate that natural uranium and DU present significantly different health effects.
We cannot respond to this comment as you do not provide these studies or references to these studies. In any case, there is no evidence of DU in the study area.

Support commentary on pages 3-5 of letter.
We will not respond to these comments as they are informative or speculative in nature.

Potential sample problems because of organic material, and use of ICP-MS and alpha spectrometry methods.
The samples were sieved in the laboratory through a 2 mm sieve. This is standard procedure for any chemical analyses in the soil matrix and especially relevant when analyzing for metals. The reason samples are sieved to 2 mm is multifactoral:

1) Provides a more homogenous soil matrix
2) Provide a more conservative estimate of metal concentrations as the sieved matrix has a higher surface area to mass ratio than an unsieved sample. This is highly relevant to the analysis of uranium and other metals as it is well known that metals are generally particulate bound.
3) Removes unwanted debris, like grasses, rocks, etc.

You do not provide reference to any other technique or laboratory method that would be more effective at uranium isotope analysis other than that provided by AMEC. Therefore, we cannot respond to the portion of the comment regarding technique or method.

Specific laboratory standard operating procedures for the ICP-MS and Alpha Spectrometry methods are provided in AMEC's *Sampling and Analysis Plan, Depleted Uranium Risk Assessment*, dated March 2008. Additionally, dilution factors are provided in the laboratory analytical reports provided in Appendix A (Analytical Sampling Results) of the *Saddle Road Uranium Soils Investigation and Baseline Human Health Risk Assessment Report* (AMEC, October 2009).

AMEC provided the laboratory with approximately one kilogram of soil for each sample. The samples were provided in resealable plastic Ziplock bags (double-bagged) and maintained at 0-6 degrees Centigrade from the time of sample collection until analysis.

The laboratory dilution process is defined in the laboratory SOPs provided in the AMEC Sampling and Analysis Plan. According to the laboratory reports included in Appendix A of the Risk Assessment Report, soil sample extracts were not diluted for any of the alpha spectrometry analyses or any of the isotopic uranium analyses via ICP-MS. Soil sample extracts were diluted 2.5 times for lead analyses via ICP-MS.

Range of activity ratios of ^{234}Th to ^{238}U is being improperly applied in interpreting the results of soil analysis for depleted uranium.
We do not agree with your evaluation. The reference document cited by you (and AMEC) specifically states:

"The natural composition of uranium is characterized by $^{234}U/^{238}U$ and $^{235}U/^{238}U$ activity ratios of about 1 and 0.046 respectively. In particular, $^{234}U/^{238}U$ activity ratios in soil typically range from 0.5 to 1.2. Depleted uranium has lower $^{234}U/^{238}U$ and $^{235}U/^{238}U$ activity ratios; considering an isotopic abundance of 0.2% for ^{235}U, these ratios become 0.18 and 0.013 respectively."

Contrary to your comment, ^{234}Th is not discussed anywhere in this reference document. Instead, the author is referring to ^{234}U. AMEC has used this reference document to identify the typical range of $^{234}U/^{238}U$ activity ratios in soil that are representative of natural uranium. DU is typically characterized by $^{234}U/^{238}U$ activity ratios of approximately 0.18, which is well below the ratios measured from soil samples collected at the Site.

234-thorium is also removed during a uranium isotope extraction process and the ratio would also be less than one....leading to misinterpretation of soil analyses.
We do does not agree with this comment. Activity ratios presented in AMEC's risk assessment report are calculated by dividing the alpha radiation activity in ^{234}U by the alpha radiation activity in ^{238}U. ^{234}Th activity is not considered in this calculation and does not have any bearing in differentiating natural and depleted uranium sources.

Soil samples collected from gullies or swales where water had moved some soil.
This is an inaccurate and unfounded statement. None of the five soil sampling locations were situated in areas that appeared to be surface water drainage pathways.

AMEC identified soil sampling locations based on the proposed alignment of the new roadway. Five separate sample locations were evenly distributed (spatially) along the proposed roadway alignment, which is in a predominantly downwind direction from PTA. The primary mode of DU contamination (if any) is assumed to result from aerial deposition of wind-blown dust particles. Consequently, AMEC restricted soil sample collection from only the top two inches of surface soil, in accordance with ASTM Method C998-05 (Surface Soil Sampling for Radionuclides).

AMEC risk assessment using an average of the $^{234}U/^{238}U$ activity ratios is an improper application as it tends to hide the anomalies that can be outliers from the normal data range.
This comment is invalid for the application of the sample results to evaluate human health risk at the site. The risk to humans is evaluated based on contaminant concentrations and assumed exposure to the contamination. Construction workers and recreational users of the future roadway will not be exposed to a single sample area for any significant period of time. Instead, it is reasonable to assume that receptors will be exposed to the contaminants along the entire roadway for approximately even durations. Therefore, when evaluating human health risk, it is a valid assumption that receptors will be exposed to the average contaminant concentrations along the entire roadway.

Furthermore, the example you provided is not relevant. The maximum concentration presented in your example is nearly 10 times greater than the rest of the sample set, which is not at all representative of the of the actual data set obtained by AMEC.

If you have any questions regarding this project, please contact Melissa Dickard at 720-963-3691 or Melissa.Dickard@dot.gov, or myself at 720-963-3723 or Dave.Gedeon@dot.gov.

Sincerely,

David Gedeon

David Gedeon, P.E.
Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 29 2010

Mr. David Gedeon
Project Manager
Federal Highway Administration
Central Federal Lands Highway Division
12300 West Dakota Avenue
Lakewood, CO 80228

Subject: Final Supplemental Environmental Impact Statement (FSEIS) for Saddle Road (State Route 200), Mamalahoa Highway (State Route 190) to Milepost 41, Hawai`i County, Hawai`i (CEQ # 20090392)

Dear Mr. Gedeon:

The U.S. Environmental Protection Agency (EPA) has reviewed the document referenced above. Our comments are provided pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508) and our NEPA review authority under Section 309 of the Clean Air Act. EPA submitted comments on the Draft Supplemental Environmental Impact Statement (DSEIS) for this project on January 6, 2010. We rated the SDEIS as Lack of Objections (LO).

In 1999 the FHWA published a Final Environmental Impact Statement (FEIS) for Saddle Road, from Mamalahoa Highway to Milepost 6. Following our review of the FEIS, EPA had no objections to proposed improvements on Saddle Road between Mamalahoa Highway and Milepost 41. In 2006, The U.S. Army Garrison, Hawai`i, acquired the Keamuku parcel which is traversed by the proposed western section of Saddle Road (W-3). The FSEIS evaluates a new western alignment alternative for Saddle Road to maximize army training opportunities on the parcel and minimize conflict with the traveling public.

Upon review of the FSEIS, EPA continues to have a lack of objections to the proposed project. We recommend that the Record of Decision (ROD) include commitments to mitigation measures listed in the FSEIS, particularly the implementation of stringent dust control and construction equipment emission control measures in order to reduce temporary impacts to air quality.

We appreciate the opportunity to review the FSEIS. When the ROD is released for public review, please send a copy to the address above (mail code: CED-2). If you have any questions, please contact me (415-947-4161) or Clifton Meek, the lead reviewer for this project. Clifton can be reached at 415-972-3370 or meek.clifton@epa.gov.

Sincerely,

Connell Dunning, Transportation Team Supervisor
Environmental Review Office
Communities and Ecosystems Division

CC: Ken Tatsuguchi, Hawaii Department of Transportation
Melissa Dickard, Federal Highway Administration
Pat Phung, Federal Highway Administration